

WHAT IS CLAIMED IS:

1. An organic light-emitting device comprising:
 - a) an anode;
 - b) a hole-transporting layer disposed over the anode;
 - c) a light-emitting layer disposed over the hole-transporting layer for producing light in response to hole-electron recombination, wherein the light-emitting layer includes at least one organic host material and one organic luminescent dopant material;
 - d) a stability-enhancing layer disposed in contact with the light-emitting layer, wherein the stability-enhancing layer includes at least one organic host material and one inorganic dopant material;
 - e) an electron-transporting layer disposed over the stability-enhancing layer; and
 - f) a cathode disposed over the electron-transporting layer.
2. The organic light-emitting device of claim 1 wherein the host material in the stability-enhancing layer is selected from electron-transporting materials.
3. The organic light-emitting device of claim 2 wherein the ionization potential of the host material in the stability-enhancing layer is equal to or less than the ionization potential of the host material in the light-emitting layer.
4. The organic light-emitting device of claim 2 wherein the host material in the stability-enhancing layer includes metal complexes of 8-hydroxyquinoline.
5. The organic light-emitting device of claim 2 wherein the host material in the stability-enhancing layer includes tris(8-hydroxyquinoline)aluminum.
6. The organic light-emitting device of claim 1 wherein the inorganic dopant material in the stability-enhancing layer is a metal or metal compound.

7. The organic light-emitting device of claim 6 wherein the dopant in the stability-enhancing layer has a work-function lower than 4.0 eV.
8. The organic light-emitting device of claim 6 wherein the dopant in the stability-enhancing layer includes alkali metals, alkaline earth metals, or rare earth metals.
9. The organic light-emitting device of claim 6 wherein the dopant in the stability-enhancing layer includes Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.
10. The organic light-emitting device of claim 6 wherein the dopant in the stability-enhancing layer has a work-function equal to or higher than 4.0 eV.
11. The organic light-emitting device of claim 6 wherein the dopant in the stability-enhancing layer includes Al, Ni, Cu, Zn, Ga, Mo, Pd, Ag, In, Sn, Pt, or Au.
12. The organic light-emitting device of claim 6 wherein the dopant in the stability-enhancing layer includes the compounds of alkali metals, alkaline earth metals, or rare earth metals.
13. The organic light-emitting device of claim 6 wherein the dopant in the stability-enhancing layer includes the compounds of Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.
14. The organic light-emitting device of claim 6 wherein the dopant in the stability-enhancing layer includes the compounds of Al, Ni, Cu, Zn, Ga, Mo, Pd, Ag, In, Sn, Pt, or Au.
15. The organic light-emitting device of claim 6 wherein the concentration of the dopant material in the stability-enhancing layer is in the range of from 0.1% to 30% by volume.
16. The organic light-emitting device of claim 6 wherein the concentration of the dopant material in the stability-enhancing layer is in the range of from 0.2% to 10% by volume.

17. The organic light-emitting device of claim 1 wherein the stability-enhancing layer includes tris(8-hydroxyquinoline)aluminum doped with Li, Na, K, Rb, or Cs.

18. The organic light-emitting device of claim 1 wherein the thickness of the stability-enhancing layer is in the range of from 2 nm to 100 nm.

19. The organic light-emitting device of claim 1 wherein the thickness of the stability-enhancing layer is in the range of from 3 nm to 30 nm.

20. The organic light-emitting device of claim 1 wherein the thickness of the light-emitting layer is in the range of from 5 nm to 45 nm.

21. The organic light-emitting device of claim 1 wherein the thickness of the light-emitting layer is in the range of from 5 nm to 30 nm.

22. An organic light-emitting device comprising:

- a) an anode;
- b) a hole-transporting layer disposed over the anode;
- c) a light-emitting layer disposed over the hole-transporting layer for producing light in response to hole-electron recombination, wherein the light-emitting layer includes at least one organic host material and one organic luminescent dopant material;
- d) a stability-enhancing layer disposed in contact with the light-emitting layer, wherein the stability-enhancing layer includes at least one organic host material and one inorganic dopant material;
- e) an electron-transporting layer disposed over the stability-enhancing layer, wherein the electron-transporting layer includes host material or dopant material or dopant concentration that are different than the host material or dopant material or dopant concentration in the stability-enhancing layer; and
- f) a cathode disposed over the electron-transporting layer.

23. The organic light-emitting device of claim 22 wherein the host material in the stability-enhancing layer is selected from electron-transporting materials.

24. The organic light-emitting device of claim 23 wherein the ionization potential of the host material in the stability-enhancing layer is equal to or less than the ionization potential of the host material in the light-emitting layer.

25. The organic light-emitting device of claim 23 wherein the host material in the stability-enhancing layer includes metal complexes of 8-hydroxyquinoline.

26. The organic light-emitting device of claim 23 wherein the host material in the stability-enhancing layer includes tris(8-hydroxyquinoline)aluminum.

27. The organic light-emitting device of claim 22 wherein the inorganic dopant material in the stability-enhancing layer is a metal or metal compound.

28. The organic light-emitting device of claim 27 wherein the dopant in the stability-enhancing layer has a work-function lower than 4.0 eV.

29. The organic light-emitting device of claim 27 wherein the dopant in the stability-enhancing layer includes alkali metals, alkaline earth metals, or rare earth metals.

30. The organic light-emitting device of claim 27 wherein the dopant in the stability-enhancing layer includes Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.

31. The organic light-emitting device of claim 27 wherein the dopant in the stability-enhancing layer has a work-function equal to or higher than 4.0 eV.

32. The organic light-emitting device of claim 27 wherein the dopant in the stability-enhancing layer includes Al, Ni, Cu, Zn, Ga, Mo, Pd, Ag, In, Sn, Pt, or Au.

33. The organic light-emitting device of claim 27 wherein the compound dopant in the stability-enhancing layer includes the compounds of alkali metals, alkaline earth metals, or rare earth metals.

34. The organic light-emitting device of claim 27 wherein the compound dopant in the stability-enhancing layer includes the compounds of Li, Na, K, Rb, Cs, Mg, Ca, Sr, Ba, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, or Mn.

35. The organic light-emitting device of claim 27 wherein the compound dopant in the stability-enhancing layer includes the compounds of Al, Ni, Cu, Zn, Ga, Mo, Pd, Ag, In, Sn, Pt, or Au.

36. The organic light-emitting device of claim 27 wherein the concentration of the dopant material in the stability-enhancing layer is in the range of from 0.1% to 30% by volume.

37. The organic light-emitting device of claim 27 wherein the concentration of the dopant material in the stability-enhancing layer is in the range of from 0.2% to 10% by volume.

38. The organic light-emitting device of claim 22 wherein the stability-enhancing layer includes tris(8-hydroxyquinoline)aluminum doped with Li, Na, K, Rb, or Cs.

39. The organic light-emitting device of claim 22 wherein the thickness of the stability-enhancing layer is in the range of from 2 nm to 100 nm.

40. The organic light-emitting device of claim 22 wherein the thickness of the stability-enhancing layer is in the range of from 3 nm to 30 nm.

41. The organic light-emitting device of claim 22 wherein the thickness of the light-emitting layer is in the range of from 5 nm to 45 nm.

42. The organic light-emitting device of claim 22 wherein the thickness of the light-emitting layer is in the range of from 5 nm to 30 nm.